

Circulatory System.

- for circulation of the blood

- 1) Heart - pump.
- 2) Arteries - mains - blood from heart.
- 3) Veins - drains - blood to heart.
- 4) Capillaries - intermediate between veins & arteries.

Heart - double circulation.

lungs - lesser circulation - pulmonary circ.
 rest " - rest of body.

Heart - in throat.

- protected in front by sternum -
at sides by ribs
behind by thoracic vertebrae

- lungs make an air-cushion - freedom for heart beat.

- lies to left of mid-line.

size - a little larger than fist.

- apex - down + to the left.
- apex heart - 3" from mid-line, below 5th rib.
- base - up + to the right
 - vessels enter + leave base

Heart enclosed in fibrous bag - pericardium
(around the heart)

- attached around roots of vessels.
- fibrous - prevents stretching.
- has a moist lining, attached onto heart for lubrication.



Septum - partition - divides heart into
r. + l. side.

right side - impure blood.

left side - blood purified in lungs.

- obliquely placed.



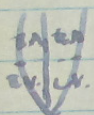
$\frac{1}{3}$ r. half of heart in front.

$\frac{2}{3}$ l. behind.

- heart muscle twisted into spirals during development.

- when heart beats - does so according to twists of muscles.

Four chambers - receiving chambers - atria
discharging " - ventricles



Atria - thin walls.

- receive blood & squirt it into ventricles.

Ventricles - heavy walls.

- left is thicker, right just sends blood to lungs.

- between atria & ventricles

atrio-ventricular valves to prevent backflow.

- leading out of ventricles -
semi-lunar valves.

Valves between chambers

use - to prevent backflow.

Valve consists of 2 leaflets on left &
3 " " on right.

- prevented from turning inside out by
fine tendinous cords - chordae tendineae.

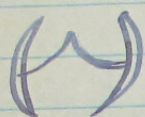


- anchored to wall of ventricle by
little muscles - papillary muscles.

- regulates valve by its pull.

- right valve - tricuspid
- left valve - bicuspid (mitral valve)
(left-less)

Semilunar valves



- each consists of 3 cups fixed to exit of pulmonary artery, leading from right ventricle to lung & aorta leading from left ventricle to rest of body.
- beginning of large arteries have fibrous ring - not much change.

Vessels entering & leaving heart

- carrying blood to heart - 6 great veins
- into - into right atrium is superior vena-cava.
- will deliver from body above heart.

- inferior vena-cava from below heart.
- into left atrium are 2 pairs pulmonary veins, bringing blood from lungs.

- outward - 2 great arteries carrying blood away.
- pulmonary artery from right ventricle towards lungs, at front of heart towards upper end.
- just behind it is aorta from l. ventricle to remainder of body.

Arteries - carry blood away from heart under pressure, in spurts.

- has outer fibrous coat.
- middle muscular coat
- both give strength & elasticity.
- smooth lining to avoid friction.

Branching - when artery branches - capacity of branches greater than that of stem - pressure reduced.

- junctions stream-lined
- branches connect with neighboring branches - anastomosis.

- blood flows from arteries into capillaries, a vast network - most important part - because work of blood done here.

Capillaries - walls thin, blood oozes through into tissues - little veins drain capillaries, then go into big veins, then one of vena cava.

Aorta - main trunk from left ventricle.

- runs into aortic arch - arching over heart & then follows front of vertebral column - changing name to descending aorta.
- in arch - 3 branches - supplying head & upper limbs.
- ones up to neck - carotid arteries.

Descending aorta - descends in front of aorta through thorax & crest & abdomen. Just before pelvis it branches into 2 iliac. Iliac arteries follow pelvic brim to front of thigh changing name to femoral. On reaching knee, divides into anterior & posterior tibial - unite in foot (sole) to form plantar arch.

- Arteries for upper limb leave aortic arch + run under clavicle - called sub-clavian - continues through arm pit + called axillary.
At elbow divides into radial + ulnar + forming arches in hand.
(through upper arm called brachial - one stem to elbow)

- Veins - return blood to heart
- walls are thinner, size larger.
 - valves to prevent backflow.
 - with veins of great circulation - 2 sets - deep, with arteries (dark flow)
- superficial, in superficial fascia, fatty layer under skin.
- In lower limb - swollen & varicose.

Symphathetics

- Final link of circulatory system.
Cells bathed in tissue fluid - lymph (clear)
- means of exchange between blood + cells of body.
 - drained by lymphatics.

- System¹ - lymph capillaries, network.
- 1) lymphatic vessels (like veins, thin walls)
- lymph increases in inflammation.
(vessels like red threads)
 - 2) - lymph glands - along course of vessels.
use - ¹to filter out infection.
²to make lymphocytes.
(white cells blood cells)

glands in groups - receive drainage of different cells.

cervical - throat * axillary - arm - pit.

* drainage of upper limb + breast.

4) lymphatic ducts.

chief one - thoracic duct, in front of
vertebral column.

- drains lower limbs + trunk.
- drain into veins at root of the neck,
lymph returned to blood stream.

Digestive System

To prepare food for assimilation

- a muscular tube.
- continuous from entrance in mouth
to exit in floor of pelvis.
- several attendant structures, such
as glands (salivary), liver, pancreas.
- parts related to different stages.
in. mouth - chewing.
neck + thorax - swallowing
abdominal cavity - digestion,
making food liquid.
- absorption,
soaking food in blood stream.
- excretion,
getting rid of waste products.
- one plan.

inside out - " mucosa - 1 layer.

- a soft inner lining to secrete
juices + absorb digested food
- 2) muscular layers (involuntary)
inner circular layer + I.C.
outer longitudinal layer O.L.

mus - mixing + propulsion.

3) fibrous layer.

- elastic, thin, strong for protection.

4) peritoneum.

- only in abdominal cavity.

- lines cavity + covers internal organs.

Mouth - teeth - chopping + grinding.

- tongue - mixing.

- salivary glands - secretion of moisture + digestive juice.

- chuck muscles - mixing + sucking.

Pharynx - passage behind + below mouth.

Esophagus - gullet.

- connects pharynx in head with stomach in upper abdomen - 10".

position - in front of vertebral column.

- runs through neck + thorax.

Abdominal cavity - largest body cavity.

- roof - is diaphragm, separates it from thorax.

- floor - pelvic floor.

- lower posterior part is pelvis.

Pelvis - lower posterior part of abdomen.

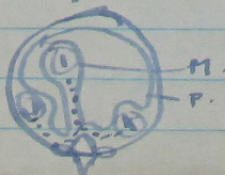
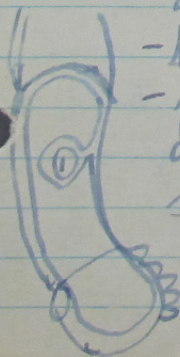
- below basin of pelvis.

Peritoneum - smooth membrane lining abdominal cavity.

- parietal layer - next body wall.

- visceral layer.

double fold connecting 2 layers called mesentery.



Mesentery - 2 layers of peritoneum to connect visceral + parietal + also to carry blood vessels to organ.

Stomach - largest expansion of tube.

position - under diaphragm in upper abdomen - more to left than right.

- 2 openings, entrance from oesophagus (left of mid-line cardiac opening)

exit is pylorus (gate) right of mid-line.

- circular muscle thick to guard exit.

- 2 hills - lesser curvature
greater curvature

- 2 surfaces - anterior (looks upward)
posterior (looks downward)

- 3 main parts - fundus (above level of entrance)

- pyloric (first near exit)

- body (in between)

- is mechanical storehouse

Small intestine - 22'

- part of tract succeeding stomach.

- small (calibre), longer in length than large.

- begins at pylorus (epigastric region)

- drains stomach

- ends in right iliac region + joins large intestine.

- slung to posterior wall by double layer of peritoneum, containing blood vessels + lymphatics.

3 parts - duodenum

ileum > jejunum

duodenum - 10" long.

- horseshoe curve, extending first to left, then right, down, across mid-line, up & to left.
- no mesentery, body wall
- pancreas - in curve of duodenum with ducts opening in duodenum, with ducts of liver.

jejunum (empty)

- begins at duodenal-jejunal conj.
- ends at ileo-colic riface.
- no definite place where duodenum joins ileum - duodenum $\frac{1}{5}$ shorter than jejunum.
- difference in internal structure
- duodenum thinner walls than jejunum
- jejunum specializes in secretion of juice. - ileum - absorption.
- mesentery in coils.
- attachment to body wall of mesentery about 6" - free edge containing intestine is 6 inches.
- in mesentery of ileum - fat.
- " " of duodenum - less fat & narrower.

large intestine - last 5' of tract.

- wide, rather than long.
- makes frame for small intestine.

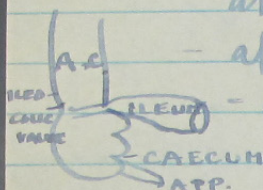
*parts - caecum.

- colon

- rectum

- anal canal

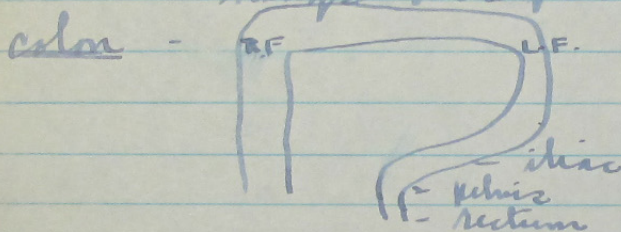
caecum - Conjunction between ileum & l. intestine is ilio-colic valve.
 - caecum below valve, ascending colon above.



- appendix grows off caecum.
 - caecum is pouch (blind)

appendix - worm-like (vermiform) 1"-8" long.
 - blind tube - drainage pore.

caecum - in right iliac fossa & appendix hangs over pelvis. Tie on pelvis



- ascending colon - starts in right iliac fossa - continues with caecum, continues upward on posterior body wall to end beneath liver at rt. flex.

- transverse colon - starts at r. flex., crosses mid line to l. flex. to near the spleen.

- goes down & forward (brim of pelvis) has mesendary.

descending colon - starts at l. flex., descends left body wall to iliac crest

(ilic colon - across the left iliac fossa to brim of pelvis)

- ilic colon has a mesendary.



The **Margaret Eaton School Digital Collection** is a not-for-profit resource created in 2014-2015 to assist scholars, researchers, educators, and students to discover the Margaret Eaton School archives housed in the Peter Turkstra Library at Redeemer University College. Copyright of the digital images is the property of Redeemer University College, Ancaster, Canada and the images may not be copied or emailed to multiple sites without the copyright holder's express written permission. However, users may print, download, or email digital images for individual non-commercial use. To learn more about this project or to search the digital collection, go to <http://libguides.redeemer.ca/mes>.